

**PROPOSED AMENDMENTS TO
APPLIANCE EFFICIENCY REGULATIONS
(EXPRESS TERMS)**

**CALIFORNIA CODE OF REGULATIONS
TITLE 20, SECTIONS 1601 THROUGH 1608**

DRAFT REGULATIONS

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Abstract

The current Appliance Efficiency Regulations, (California Code of Regulations, Title 20, Sections 1601 through 1608), dated August 9, 2009, contain amendments that were adopted by the California Energy Commission on December 3, 2008, and replaced all previous versions. The official version of these regulations is published by the Office of Administrative Law.

The Appliance Efficiency Regulations include standards for federally-regulated appliances and non-federally-regulated appliances. Twenty-three categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles or other mobile equipment.

Keywords

Appliance Efficiency Regulations, appliance standards, televisions, and consumer audio and video equipment.

Proposed new language appears as underline (example) and draft deletions appear as ~~strikeout (example)~~. Existing language appears as plain text. Three dots or "...” represents the substance of the regulations that exist between the proposed language and current language

**CALIFORNIA CODE OF REGULATIONS, TITLE 20:
DIVISION 2, CHAPTER 4, ARTICLE 4, SECTIONS 1601-1608:
APPLIANCE EFFICIENCY REGULATIONS**

Section 1601. Scope.

- ...
- (v) Televisions with a screen area not greater than 1,400 square inches, and consumer audio and video equipment, which are televisions, compact audio products, digital versatile disc players, and digital versatile disc recorders.

Section 1602. Definitions.

- ...
- (v) **Televisions, and Consumer Audio and Video Equipment.**

"Aspect ratio" means the ratio of width to height of the viewable screen area. Common examples include 4:3 and 16:9.

"Automatic brightness control" means an integrated control system that automatically adjusts the brightness of a television based upon ambient lighting conditions.

~~"Color television set" means an electrical device designed to convert incoming broadcast signals into color television pictures and associated sound.~~

"Combination TV" means a system in which a television or television monitor and an additional device or devices (including but not limited to a DVD player or VCR) are combined into a single unit in which the additional devices are included in the television casing;

"Component TV" means a television composed of two or more separate components (e.g., separate display device and tuner) marketed and sold as a television under one model or system designation. The system may have more than one power cord.

"Computer monitor" means an analog or digital device designed primarily for the display of computer generated signals and that is not marketed for use as a television.

"Download acquisition mode (DAM)" or "Standby-active mode" means the product is connected to a power source, produces neither sound nor a picture, and is downloading channel listing information according to a defined schedule for use by the electronic programming guide, monitoring for emergency messaging/communications or otherwise communicating through a network protocol. The power use in this mode is typically greater than the power requirement in TV standby-passive mode and less than the power requirement in on mode.

“Forced menu” means a menu which requires the selection of a display mode by a user upon their first use after the manufacture of the television.

“Integrated occupancy sensor” means a feature built into a television capable of sensing presence and entering TV standby-passive mode or standby-active mode to save energy in an empty room.

~~“Monochrome television set” means an electrical device designed to convert incoming broadcast signals into monochrome television pictures and associated sound.~~

“Native vertical resolution” means the physical pixel count for the vertical axis of the television. For example a television with a screen resolution of 1920 x 1080 would have a native vertical resolution of 1080.

“On mode” means the product is connected to a power source and produces sound and a picture. The power requirement in this mode is typically greater than the power requirement in standby-passive and download acquisition modes.

“Retail on mode power” is the measurement of on mode power in the most consumptive mode available in a forced menu.

“Screen size” means the diagonal length from one corner to the corner furthest away of the viewable screen area of a television, measured in inches.

“Selected input mode” means the input port(s) selected which the television is using as a source to produce a visible or audible output. These modes are required for televisions with multiple possible inputs including but not limited to coaxial, composite, S-Video, HDMI, and component connectors.

“Television (TV)” means an analog or digital device designed primarily for the display and reception of a terrestrial, satellite, cable, Internet Protocol TV (IPTV), or other broadcast or recorded transmission of analog or digital video and audio signals. TVs include combination TVs, television monitors, component TVs, and any unit that is marketed to the consumer as a TV. “Television (TV)” does not include computer monitors.

~~“Television (TV) set” means a color television set or a monochrome television set.~~

“Television monitor” means a TV that does not have an internal tuner/receiver or playback device.

“TV standby-passive mode” means the appliance television is connected to a power source, produces neither sound nor ~~vision~~ picture but can be switched into another mode with the remote control unit or via an internal signal.

“Viewable screen area” means the continuous total area of a television in square inches which displays a digital or analog video signal and is viewable to a consumer.

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Section 1604. Test Methods for Specific Appliances.

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(v) Televisions, and Consumer Audio and Video Equipment.

- (1) The test method for standby-passive mode for consumer audio and video equipment is International Electrotechnical Commission (IEC) 62087:2002(E) – “Methods of Measurement for the Power Consumption of Audio, Video, and Related Equipment.”

The following test procedures for televisions take effect as state law only on the removal of federal preemption by action such as a change in federal law.

- (2) The test method for standby-passive mode for televisions is International Electrotechnical Commission (IEC) 62301:2005, Edition 1.0 “Household Electrical Appliances – Measurement of Standby Power.”
- (3) The on mode and power factor test method for televisions shall be International Electrotechnical Commission (IEC) 62087:2008(E), Edition 2.0 – “Methods of Measurement for the Power Consumption of Audio, Video, and Related Equipment.” Televisions shall be tested using section 11.6.1: “On mode (average) testing with dynamic broadcast-content video signal.”

(A) Power Factor.

The power factor of the television shall be measured during the on mode test and the reported value shall be the average of power factor measurements taken at one minute intervals simultaneous to IEC 62087:2008(E), Edition 2.0 section 11.6.1 on mode wattage measurements. The measurement of power factor must be accurate to a hundredth of a percent.

(B) Testing Protocols.

A television shall be tested as manufactured without any modifications to screen settings with the exception of televisions manufactured with a forced menu. Televisions manufactured with a forced menu shall be adjusted and tested under the following conditions, 1 or 2, as applicable to the unit being tested.

1. The on mode measurement of a television with a forced menu shall be tested in the “home” mode or the manufacturer’s recommended mode for home use. In addition, the on mode of

a television shall be measured in the most energy consumptive mode available in the forced menu.

2. If neither a “home” mode nor a manufacturer’s recommended mode for home use are available, the television shall be tested in the most consumptive mode available in the forced menu to measure the on mode power.

(C) On Mode Power Consumption.

The on mode power consumption for televisions with and without forced menus, and incorporating automatic brightness controls, shall be calculated as follows:

$$P_{a1 \text{ broadcast}} = 0.55 * P_{o \text{ broadcast}} + 0.45 * P_{abc \text{ broadcast}}$$

Where:

$P_{o \text{ broadcast}}$ = on mode power test with 300 lux entering the light sensor

$P_{abc \text{ broadcast}}$ = on mode power test with 0 lux entering the light sensor.

(D) Light Measurement Protocols.

All luminance testing shall be performed in dark room conditions. The display screen illuminance measurement (E) in TV standby-passive mode must be less than or equal to 1.0 lux. Measurements should be taken perpendicular to the center of the display screen using a Light Measuring Device (LMD).

Measurements shall be made using a reliable, accurate and reproducible measurement procedure, which takes into account the generally recognized state of the art measurement methods. Measurements shall also be made with the Automatic Brightness Control function, if such a function exists, disabled. If the Automatic Brightness Control function exists and cannot be disabled, then measurements shall be performed with light entering directly into the ambient light sensor at a level between 300 lux and 400 lux.

1. Ensure the television is set to the Home mode, or the default mode as shipped.
2. Immediately following the on mode power testing using the dynamic broadcast-content video signal as outlined in Section 1604(V)(3) display the three bar video signal provided in IEC 62087 Edition 2.0, Section 11.5.5, which displays three bars of white (100%) over a black (0%) background.

3. After the three bar video signal has been displayed for 10 minutes, measure the luminance (L_{home}). See *Note 1*.
4. Within 1 minute of measuring L_{home} , set the television to Retail mode, or the brightest selectable preset mode, and display the three bar video signal.
5. After the three bar video signal has been displayed for an additional 10 minutes, measure the luminance (L_{high}). See *Note 2*.
6. Calculate and report the luminance ratio by dividing L_{home} by L_{high} .: Luminance ratio = L_{home}/L_{high}

Note 1: For television sets that are known to stabilize within 10 minutes, this duration may be reduced if the resulting measurement can be shown to be within 2% of the result that would otherwise be achieved using the full 10 minute duration.

Note 2: When possible, measurements of luminance shall be made without changing the LMD's measurement position on the display when switching between the home mode and retail mode. If this is not possible, the tester should replicate the measurement position of the LMD so that measurements in the home-mode and retail-mode are in the same position on the display.

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The following documents are incorporated by reference in Section 1604.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

IEC 62087 (2002) (E)	Methods of Measurement for the Power Consumption of Audio, Video, and Related Equipment.
<u>IEC 62087:2008(E), Edition 2.0</u>	<u>Methods of Measurement for the Power Consumption of Audio, Video, and Related Equipment</u>
<u>IEC 62301:2005</u>	<u>Household Electrical Appliances – Measurement of Standby Power</u>

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Section 1605.3. State Standards for Non-Federally-Regulated Appliances.

(v) Televisions, and Consumer Audio and Video Equipment.

- (1) **Consumer Audio and Video Equipment.** The power usage of consumer audio and video equipment manufactured on or after the effective dates shown shall be not greater than the applicable values in Table V-1. For equipment that consists of more than one individually powered product, each with a separate main plug, the individually powered products shall each have a power usage not greater than the applicable values shown in Table V-1.

Table V-1
Standards for Consumer Audio and Video Equipment

<i>Appliance Type</i>	<i>Effective Date</i>	<i>Maximum Power Usage (Watts)</i>
Compact Audio Products	January 1, 2007	2 W in Audio standby-passive mode for those without a permanently illuminated clock display 4 W in Audio standby-passive mode for those with a permanently illuminated clock display
Televisions	January 1, 2006	3 W in TV standby-passive mode
Digital Versatile Disc Players and Digital Versatile Disc Recorders	January 1, 2006	3 W in Video standby-passive mode

- (2) **Televisions.** All televisions manufactured on or after the effective dates shall meet the requirements shown in Table V-2.
- (3) In addition, televisions manufactured on or after January 1, 2011 shall meet the requirements shown in Sections 1605.3(v)(2)(A) and 1605.3(v)(2)(B) and 1605.3(v)(2)(C) of this Article.
- (A) A television shall automatically enter TV standby-passive mode or standby-active mode after a maximum of 15 minutes without video and/or audio input on the selected input mode.

- (B) A television shall enter TV standby-passive mode when turned off by remote or integrated button/switch.
- (C) The peak luminance of the product in “home” mode, or in the default mode as shipped, shall not be less than 65% of the peak luminance of the “retail” mode, or the brightest selectable preset mode, of the product.

Table V-2
Standards for Televisions

<u>Effective Date</u>	<u>Screen Size (area A in square inches)</u>	<u>Maximum TV Standby-passive Mode Power Usage (watts)</u>	<u>Maximum On Mode Power Usage (P in Watts)</u>	<u>Minimum Power Factor for (P ≥ 100W)</u>
<u>January 1, 2006</u>	<u>All</u>	<u>3 W</u>	<u>No standard</u>	<u>No standard</u>
<u>January 1, 2011*</u>	<u>$A \leq 1400$</u>	<u>1 W</u>	<u>$P \leq 0.20 \times A + 32$</u>	<u>0.9</u>
<u>January 1, 2013</u>	<u>$A \leq 1400$</u>	<u>1 W</u>	<u>$P \leq 0.12 \times A + 25$</u>	<u>0.9</u>
*The efficiency standards for televisions take effect one year after removal of federal preemption for the test procedures in section 1604(v), but no earlier than the effective dates in Table V-2. The January 1, 2011 efficiency standards are only effective for televisions manufactured before the effective date of the January 1, 2013 standards.				

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Section 1606. Filing by Manufacturers; Listing of Appliances in Database.

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Table X Continued - Data Submittal Requirements

	Appliance		Required Information	Permissible Answers
V	Televisions		<u>Type*</u>	CRT, Plasma, LCD, DLP, Rear Projection, Laser, OLED, LCOS
			<u>Viewable Screen Area</u>	
			<u>Screen Size</u>	
			<u>Automatic Brightness Control</u>	Yes, No
			<u>Automatic Brightness Control enabled</u>	Yes, No
			<u>Forced menu</u>	Yes, No
			<u>Native Vertical Resolution</u>	
			<u>Aspect Ratio</u>	
			<u>Integrated Occupancy Sensor</u>	Yes, No
			<u>L_{home}</u>	
			<u>L_{high}</u>	
			<u>Luminance Ratio</u>	
			<u>Power Usage in TV Standby-Passive Mode Power (watts)</u>	
			<u>On Mode Power (watts)</u>	
			<u>Retail On Mode Power (watts)</u>	
			<u>Power Factor</u>	
	Consumer Audio and Video Equipment	Compact Audio Products	Power Usage in Audio Standby-Passive Mode for Models Without a Permanently-Illuminated Clock Display (watts)	
			Power Usage in Audio Standby-Passive Mode for Models With a Permanently-Illuminated Clock Display (watts)	
		Televisions	Power Usage in TV Standby-Passive Mode (watts)	
		Digital Versatile Disc Players and Digital Versatile Disc Recorders	Power Usage in Video Standby-Passive Mode (watts)	

* "Identifier" information as described in Section 1602(a).

1 = Voluntary for federally-regulated appliances

2 = Voluntary for state-regulated appliances

...

(4) Declaration

(A) Each statement shall include a declaration, executed under penalty of perjury of the laws of California, that:

...

5. all units of the appliance are marked as required by Section 1607, and, for the following appliances are marked as follows:

- ...
- j. for televisions, each television shall display the on mode power consumption as determined using the test method in Section 1604(v)(3) of this Article and as certified by the manufacturer under the requirements found in Section 1606(a) of this Article;
 - k. for televisions, any publication, website, document, or retail display that is used for sale or offering for sale a television manufactured on or after January 1, 2011 and which includes a description of the physical dimensions of the television shall include the identical on mode power consumption, in watts, immediately following and in the same font and same font size as the description of the physical dimensions. as filed under the requirements found in Section 1606(a)(3)(D) of this Article.

...

Section 1607. Marking of Appliances.

...

(d) Energy Performance Information.

...

(11) Televisions.

- (A)** Each television shall be marked, permanently and legibly on an accessible and conspicuous place on the unit, in characters of equal size to the largest font used within the menu screen within the television's built in menu, the on mode power consumption, in watts, as determined using the test method in Section 1604(v)(3) of this Article and filed under the requirements found in Section 1606(a)(3)(D) of this Article.
- (B)** Any publication, website, document, or retail display that is used for sale or offering for sale of a television manufactured on or after July 1, 2010 that includes a description of the physical dimensions of the television shall also include the identical on mode power consumption, in watts, immediately following and in the same font and same font size as the description of the physical dimensions, as filed under the requirements found in Section 1606(a)(3)(D) of this Article.